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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Braulio A. POLANCO et al.	
Serial No.:	10/749,805	
Filing Date:	31 December 2003	Group No.: 1771
Title:	HIGH LOFT LOW DENSITY NONWOVEN WEBS OF CRIMPED FILAMENTS AND METHODS OF MAKING SAME	Examiner: J. Pierce
Customer No.	35844	

REPLY BRIEF UNDER 37 C.F.R. §41.41

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Applicants respectfully submit this Reply Brief in response to the Examiner's Answer dated 17 October 2006. Applicants believe that no fee is owed. However, if a fee is owed, please charge it to Deposit Account No. 19-3550.

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

05 Dec. 2006

05 Dec. 2006 — Maxwell J. Petersen

Date — Signature

a) The Rejection Under 35 U.S.C. §112, First Paragraph, Is Based On A Misunderstanding Of Claim Language.

The rejection of Claims 2-9, 20-22, 24-38, 40-46, 48 and 49 under 35 U.S.C. §112, first paragraph, is based on a misinterpretation of claim language that is not consistent with Applicants' specification. As such, the rejection should be reversed.

The rejected claims limit the nonwoven web in terms of formation index and bulk. The term "formation index" (described on page 8, lines 11-19 and page 19, line 21 - page 21, line 10) is a measurement of surface uniformity that results form forming the nonwoven web using the process described in Applicants' specification. Because the process is designed to provide nonwoven materials with greater surface uniformity, the products in the rejected claims are defined in terms of a minimum formation index.

The bulk of a nonwoven material is a well-known measurement of the amount of loft. Loftier nonwoven materials have higher bulk. Nonwoven materials having greater loft, and higher bulk, will naturally have lower surface uniformity than similar materials having lower bulk, regardless of the process used to make them.

Thus, while the process described in the specification results in nonwoven materials having improved surface uniformity defined as a higher formation index, the actual value of the formation index will varies depending on the bulk. The formation index will be lower for nonwoven materials of higher bulk, and higher for similar materials of lower bulk. The same can be said for nonwoven materials made using other processes. Materials having higher bulk naturally have lower surface uniformity.

The rejected claims merely recognize that the nonwoven materials of the invention, while having improved surface uniformity compared to similar materials made using other processes, will have lower surface uniformity when the bulk is higher than when it is lower. Thus, Claim 2 requires a formation index above about 37.6 on the top side if the web has a bulk to about 0.1 inches, and a formation index above about 32.03 on the top side if the web has a bulk over about 0.1 inches. Claims 3, 6, 7, 20, 24, 35, 36, 40, 43 and 46 similarly require a higher minimum formation index when the bulk is lower, and a lower minimum formation index when the bulk is higher.

As the bulk (thickness) of the nonwoven material increases, so will its basis weight, assuming other factors (e.g. density, type of material, fiber size) are constant. Therefore, the formation index is related to the basis weight of a nonwoven material in

essentially the same way. As the basis weight of a material increases (and its bulk increases), then its surface uniformity (i.e. formation index) will decrease. While the invention achieves improved surface uniformity at high and low basis weights, the actual value of the formation index will be higher at lower basis weights and lower at higher basis weights. Thus, Claims 4, 5, 8, 9, 21, 22, 25, 26, 37, 38, 41, 42, 45, 48, and 49 require a higher minimum formation index when the basis weight is lower, and a lower minimum formation index when the basis weight is higher.

The Examiner is probably correct in stating that a more precise mathematical relationship exists between a) formation index and b) bulk or basis weight, for a given nonwoven material. To determine such a precise relationship empirically would require making a large number of nonwoven material samples of smaller increments of bulk and basis weight, and measuring the formation index at each increment. Applicants' budget for this project only enabled making a certain number of nonwoven material samples, not enough to determine a precise mathematical relationship between formation index and bulk or basis weight.

However, it is not proper for the Examiner to read a precise mathematical relationship into the claims, and then reject the claims as not being enabled. Applicants are not claiming a precise mathematical relationship, and have no duty to support something that is not being claimed. The approach to claiming taken by Applicants is based on the available data, and it fully supported by the specification. This is all that the law requires.

If a person skilled in the art wants to learn the precise mathematical relationship between formation index and bulk or basis weight, then there is enough information in Applicants' specification to enable the person to make the necessary samples and run the necessary tests. However, knowledge of the mathematical relationship is not needed to determine whether a product infringes one or more of these claims. All that is needed are measurements of bulk, basis weight and uniformity index for the products in question, and comparison of the products to the claims. In summary, the 35 U.S.C. §112 rejection is improper because the Examiner a) improperly reads into the claims a mathematical relationship that is not recited, and b) rejects the claims based on the failure to enable or support the mathematical relationship. This rejection should be reversed.

Notwithstanding the foregoing, Applicants realize that Claims 8, 9, 24, 25, 26, 40, 41, 42, 46, and 47 reflect isolated data points that vary slightly from the conventional wisdom of a formation index that rises as the bulk or basis weight declines. These isolated variations most likely result from inherent margins of error in the test procedures and/or the manufacturing process. A closer examination of these claims reveals that, as a whole, they reflect the conventional wisdom of the formation index rising at lower bulk and basis weight. Persons skilled in the art would understand this when reading these claims. Additionally, the slight variations in these claims do not provide proper basis for rejecting the remaining claims (e.g. Claims 2-7, 20-22, 27-38, 43-45 and 48-49) that do not recite such variations.

b) The Obviousness Rejections Hinge On A Fundamental Misinterpretation Of Pike et al.

The Examiner rejected Claims 1-15, 19-22, 24-30, 34-38, 40-46, 48 and 49 under 35 U.S.C. §103(a) as obvious over U.S. Patent 5,382,400 ("Pike et al."). The Examiner rejected Claims 16-18 and 31-33 under 35 U.S.C. §103(a) as obvious over Pike et al. in view of U.S. Patent 5,770,531 ("Sudduth et al."). On page 8 of the Examiner's Answer, the Examiner states:

> On page 28, lines 6-8, the current specification states:
> "Example 14 was produced according to the above-described hot FDU biocomponent spunbond technology of Strack et al. (supra) to a basis weight of 199 gsm (5.87 osy), with a bulk of 08.9 mm (0.35 inches) and a density of 0.022 g/cc."

The Examiner then incorrectly equates the prior art hot fiber drawing unit ("FDU") process with a cold FDU process, and incorrectly states that Pike et al. discloses a cold FDU process:

> These cited portions of the specification clearly disclose that Example 14 was produced according to the teachings of Pike et al. (cold FDU production) and the specification further discloses that Examples 15-20 were produced according to the teachings of Pike et al. (Examiner's Answer, page 8).

To the contrary, Pike et al. unequivocally describes fabrics produced by a hot FDU process and does not disclose fabrics produced by a cold FDU process:

> More particularly, the process of the present invention for making a nonwoven fabric comprises the steps of:
>
> a. melt spinning continuous multicomponent polymeric filaments comprising first and second polymeric components, the multicomponent filaments having a cross-section, a length, and a peripheral surface, the first and second components being arranged in substantially distinct zones across the cross-section of the multicomponent filaments and extending continuously along the length of the multicomponent filaments, the second component constituting at least a portion of the peripheral surface of the multicomponent filaments continuously along the length of the multicomponent filaments, the first and second components being selected so that the multicomponent filaments are capable of developing latent helical crimp;
> b. drawing the multicomponent filaments;
> c. at least partially quenching the multicomponent filaments so that the multicomponent filaments have latent helical crimp;
> d. activating said latent helical crimp; and
> e. thereafter, forming the crimped continuous multicomponent filaments into a first nonwoven fabric web.
>
> Preferably, the step of activating the latent helical crimp includes heating the multicomponent filaments to a temperature sufficient to activate the latent helical crimp. More preferable, the step of activating the latent helical crimp includes contacting the multicomponent filaments with a flow of air having a temperature sufficiently high to activate the latent helical crimp. Even more preferably, the multicomponent filaments are drawn with the flow of air contacting the filaments and having a temperature sufficiently high to activate the latent helical crimp. By crimping the multicomponent filaments with the same flow of air used to draw the filaments, the filaments are crimped without an additional process step and without interrupting the process. Advantageously, this results in a faster, more efficient, and more economical process for producing crimped polymeric nonwoven fabric. Preferably,

> the multicomponent filaments are drawn with a fiber draw unit or aspirator by heated air at a temperature sufficient to heat the filaments to a temperature from about 110° F. to a maximum temperature less than the melting point of the lower melting component. However, it should be understood that the appropriate drawing air temperature to achieve the desired degree of crimping will depend on a number of factors including the type of polymers being used and the size of the filaments. (Pike et al., Col. 3, line 23 – Col. 4, line 10).

Applicants' specification plainly distinguishes a cold FDU process (used to make the nonwoven materials of the invention) from a hot FDU process (used to make the nonwoven materials of Pike et al.) (See page 6, lines 8-11, page 13, lines 19-29, page 15, lines 12-21, page 21, line 11 – page 22, line 21).

The Examiner further states that Applicants' control Examples 14-20 (produced using a hot FDU process) yield differences in formation indices between top and wire sides of "less than 11%" at low numbers of web repetition, under the fiber deposition apparatus (Examiner's Answer, pages 8-9). This is not a correct interpretation of Applicants' data

As shown in Applicants' Table 3, the difference in formation index between top and wire sides of a nonwoven web is determined from an average of 20 samples. The "reps" referred to in the table reflect 20 individual samples taken from a finished nonwoven web, and do not reflect a number of passes under a fiber deposition apparatus. This is consistent with the test procedure for measuring formation index (page 19, line 21 et seq.) which states that 20 samples of each nonwoven web are measured, so that the formation index numbers can be averaged (page 20, lines 14-18). The data in Table 3 merely show the individual numbers for the 20 samples that are used to generate the average values at the bottom of the table.

References to control Example 14 (produced with a hot FDU), the difference between top side and bottom (wire) side formation indices is:

$$\frac{31.06-19.07}{19.07}\times 100\% = 63\%$$

Referring to control Example 15 (provided with a hot FDU), the difference between top and bottom side formation indices is:

$$\frac{37.04-32.03}{32.03}\times 100\% = 16\%$$

Similar calculations for control Examples 16-20 yield formation index differences of 16%, 23%, 20%, 13% and 16%, respectively. All of the control samples exhibited formation index differences outside the scope of Applicants' Claims, which limit the difference to "less than about 11%".

Applicants' data show clear and compelling differences between the claimed nonwoven materials and those produced using the prior art FDU process, and such differences are reflected in the claim limitations. The secondary reference ("Sudduth et al.") does not overcome the voids in the primary reference ("Pike et al."). The obviousness rejections are premised on a fundamental misinterpretation of both Pike et al. and Applicants' own data. No claim is obviousness. The rejections should be reversed.

c) **Conclusion**

For these reasons, the claim rejections under 35 U.S.C. §§112 and 103(a) should be reversed.

Respectfully submitted,

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